WHAT IS CLAIMED

1) A web alignment device (1) to align a web (9) of continuous print medium having two outer edges and originating from an upstream device to a stable lateral position with respect to a printing system for further printing on said continuous web (9), the printing system having a drive system (7,8) downstream of the web alignment device (1), the alignment device (1) comprising:

- Mechanical means (2) for defining an entry position of a web (9), the web (9) contacting the mechanical means (2) in sliding or rolling, the web (9) being supplied as a nearly tension free loop,
- Braking means (6) to reduce the tension-force per unit of medium width at the end of an alignment zone compared to the tension force per unit of medium width downstream as exerted by the drive system (7, 8) of the printing system,
- Means defining a curved or partially curved first web movement trajectory including areas where the print medium slides in friction contact with a curved surface, the means for defining the curved or partially curved first web movement trajectory being located upstream of said braking means (6), the sliding zone of the curved or partially curved first web movement trajectory extending over a finite length L1 satisfying the relation

$$L1 > \max (50 \text{ mm}, P/4)$$

where P corresponds to the width of the print medium,

- Adjustable lateral guiding means with side guides (4, 4', 5, 5') on both side edges of the web (9) adjustable in width to contact at either of the two outer edges or at both outer edges of said print medium, thus limiting the lateral movement dimension available for said print medium in two opposing directions, the adjustable guiding means extending over a finite second web movement trajectory of said print medium, wherein the finite second web movement trajectory with side guides (4, 4', 5, 5') on both side edges of the web (9) extends in the upstream direction to further than said means (2) for defining the entry position and comprises at least a part of the first trajectory where said print medium is in sliding contact with said means defining said curved or partially curved first trajectory, L2 being the length of simultaneous side-guiding and support for sliding satisfying the relationship:

$L2 > 2/3 * \max (50 \text{ mm}, P/4)$.

2) The device (1) of claim 1, wherein the braking means (6) is adapted to reduce the tension-force per unit of medium (9) width at the end of an alignment zone compared to the tension force per unit of medium (9) width downstream as exerted by the drive system (7, 8) of the printing system by a factor of at least 3.

3) The device of claim 1 or 2, wherein a finite second web movement trajectory (Lguided) satisfies the relationship Lguided > max (50mm, mediumwidth/4).

4) The device of any previous claim, wherein the nearly tension free loop has a tension of 2×10^{-2} N/m per gram per square meter of web material or less.

5) The device (1) of any previous claim wherein said entry position defining means (2) comprises one or more friction inducing rollers or fixed shaft that increase the paper tension in the alignment section above a minimum tension of 6 N/m.

6) The device (1) of any previous claim wherein the means for defining the curved or partially curved first movement trajectory comprises one or more fixed rollers or curved shells (3, 3', 3a, 3b 3c) that contact the web over at least part of its width and wherein at least one of these fixed rollers or fixed shells has a radius of curvature exceeding 32 mm.

7) The device (1) of any previous claim, wherein the lateral guiding means comprises adjustable parallel flanges (4', 5') adjustable in a lateral direction with respect to the web (9).

8) The device (1) of any one of the claims 1 to 5, wherein the means for defining the curved or partially curved first movement trajectory comprises one or more curved shells or fixed rollers (3, 3', 3a, 3b 3c) that contact the web (9) over at least part of its width and wherein the lateral guiding means (4, 4', 5, 5') comprise adjustable parallel flanges adjustable in the lateral direction with respect to the web (9) and wherein tubular extensions (4', 5') comprising end segments of said fixed rollers or curved shells (3, 3',

3a, 3b 3c) are integrated with said adjustable flanges (4', 5') and are moveable with those.

9) The device (1) of any of claims 6 to 8, further comprising additional flexing means (11) that prevent wrinkles being formed in the web when in said alignment device.

10) The device (1) of any previous claim wherein the means for defining the curved or partially curved first movement trajectory comprises a combination of at least two curved shells (3a, 3b, 3c), relatively rotatable one to the other, whose length is determined by relative rotation between the at least two curved shells (3a, 3b, 3c).

11) The device (1) of claim 10, wherein an edge of one of the curved shells (3a, 3b, 3c) is in helical form and matches the form of an edge of another of the curved shells (3a, 3b, 3c).

12) The device (1) of any previous claim wherein, wherein said finite second web movement trajectory (Lguided) satisfies the relationship Lguided > max (50mm, mediumwidth/4).

13) A method to align a web (9) of continuous print medium originating from an upstream device to a stable lateral position with respect to a printing system for further printing on said continuous web (9), said printing system comprising a drive system (7, 8), the method comprising:

guiding a print medium at a reduced tension of said print medium compared to the downstream tension imposed by a drive (7, 8) of the printing system, such that the print medium forms a nearly tension free loop prior to entering into sliding contact in a sliding zone along a means defining a curved or partially curved first web movement trajectory in the web travel direction, the sliding zone of the curved or partially curved first web movement trajectory extending over a finite length L1 satisfying the relation

$$L1 > \max(50\ \text{mm}, P/4)$$

where P corresponds to the width of the print medium,

centering said print medium by guiding both lateral edges in the lateral direction by adjustable lateral guiding means (4, 4', 5, 5') along a finite second web movement trajectory that comprises at least a part of the first trajectory where the print medium is in

friction sliding contact with said means defining said curved or partially curved trajectory, L2 being the length of simultaneous side-guiding and support for sliding length (L2) of the second trajectory satisfying the relationship: $L2 > 2/3 * \max(50\ mm, P/4)$.

14) The method of claim 13, wherein the nearly tension free loop generates a tension of 2×10^{-2} N/m per gram per square meter of web material or less.

15) The method of any one of the claims 13or 14 characterized in that said side-guides (4, 4', 5, 5') are adjusted to a distance W satisfying a relation compared to the print medium width P

$$P - 2\ mm < W < P$$

16) The method of any one of the claims 13 or 14 characterized in that said side-guides (4, 4', 5, 5') are adjusted to a distance W satisfying a relation compared to the print medium width P

$$P - 1\ mm < W < P.$$

17) The method of any one of the claims 13 to 16, wherein said finite second web movement trajectory (Lguided) satisfies the relationship Lguided > max (50mm, mediumwidth/4).

18) The method of any one of the claims 13 to 17, wherein braking means (6) reduces the tension-force per unit of medium (9) width at the end of an alignment zone compared to the tension force per unit of medium (9) width downstream as exerted by the drive system (7, 8) of the printing system by a factor of at least 3.